

A DEP STRATEGY TO ENHANCE PENNSYLVANIA'S CHESAPEAKE BAY RESTORATION EFFORT

EXECUTIVE SUMMARY

Since 1985, Pennsylvania has invested more than \$4 billion through various loan and grant programs toward Chesapeake Bay restoration efforts. That investment has resulted in a 25 percent phosphorous reduction, 6 percent nitrogen reduction and nearly 15 percent sediment reduction.

Since 2011, Pennsylvania has, according to the U.S. Environmental Protection Agency's (EPA) progress analysis using the Chesapeake Bay model, significantly reduced its discharges of nutrients from point sources such as wastewater treatment plants. Data show that Pennsylvania is on track for meeting phosphorous reduction goals. However, those same data show Pennsylvania is not meeting nitrogen and sediment goals.

Because of that lack of attainment, the EPA has taken two actions: withholding \$2,896,723 in federal funding for Chesapeake Bay-related activities and grants for pollutant reduction projects; and identifying additional progressive options that would likely be pursued "if it is necessary to ramp up federal actions to address the Pennsylvania Bay restoration shortfalls," according to communications from EPA in September 2015.

Pennsylvania's wastewater treatment sector has achieved its pollutant reduction goals. Other source sectors have not made similar advancement. Of particular concern is the lack of adequate progress in reducing nitrogen and sediment loads from the agricultural and urban stormwater sectors. This can be attributed to several factors.

First, the current Chesapeake Bay pollution reduction effort for agricultural and urban stormwater pollutant sources is fundamentally inaccurate because it relies overwhelmingly on installation of Best Management Practices (BMPs) that were cost-shared, meaning only those BMP installations where a portion of the cost was shared by federal or state government. Further, the Bay watershed in Pennsylvania is home to 33,610 farms. EPA recommends that the Pennsylvania Department of Environmental Protection (DEP) inspect 10 percent of farms annually. In 2014, DEP conducted a total of 592 inspections, which equates to a 1.8 percent overall inspection rate, and only 17.6 percent of EPA's recommended level.

Inspection and verification activities related to agricultural and urban stormwater sources have been a missing piece in creating a culture of compliance with existing regulatory requirements, and documenting pollutant reductions necessary to meet our targets. If these basic functions of BMP documentation and verification of compliance are not given their proper role, Pennsylvania's performance in meeting water quality goals and Bay performance measures will continue to seriously lag.

The second factor is the manner by which Pennsylvania has employed the resources available, (both personnel and cost-share dollars) to implement our pollutant reduction efforts in the Bay watershed over the past decade. For example, in FFY 2014, \$146.6 million (combined state and

Federal funding) was spent on programs to address nitrogen, phosphorus and sediment reduction statewide. \$127.6 million, or 87 percent, was used for BMP deployment. The average cost-share on BMP installation is 75 percent government (state and/or federal), and the average cost per farm for BMP installation is \$42-45K per BMP. Yet we still are not achieving our targeted reduction goals.

Further, the most reliable estimate of the amount of resources required to fully implement nonpoint source BMPs called for in Pennsylvania's Watershed Implementation Plan (WIP) is an August 2013 report from the Pennsylvania State University Environmental and Natural Resources Institute. That report, provides two estimates. The first estimate shows a need of \$3.6 billion in capital costs to fully implement all nonpoint source BMPs in the WIP, in incremental levels between 2011 and 2025. The second estimate annualizes costs through 2025, and includes Operation and Maintenance (O&M) costs, resulting in a figure of \$378.3 million per year.

To meet EPA inspection expectations and implement the recommendations contained in this paper by itself, DEP could require a total of 40 additional positions and an annual General Fund budget increase of \$7.3 million. This is a significant increase, made even more significant by the sobering fiscal situation that currently exists in the Commonwealth. It is clear that DEP cannot work alone and be successful.

Pennsylvania must change its approach for the Chesapeake Bay. Working with a number of partners and stakeholders, DEP has developed several short, mid and long-term recommendations, aimed at augmenting our approach to water quality improvements in the Chesapeake Bay watershed. DEP and the Pennsylvania Departments of Agriculture (PDA) and Conservation and Natural Resources (DCNR) collaborated strongly in this effort to coordinate plans, policies and resources. This paper describes six essential recommendations:

1. Addressing Pollutant Reduction Deficiencies by meeting the EPA goals of inspecting 10 percent of farms in the Bay watershed annually, with increased inspection and compliance efforts in the agriculture sector using existing DEP and Conservation District staff, and with continued DEP outreach and program development for urban stormwater systems.
2. Focusing on Local Water Quality Improvement and Protection (LWQ) by locating and quantifying previously undocumented BMPs, and putting new high-impact, low-cost BMP projects on the ground in watersheds that are currently impaired by agriculture or stormwater by shifting an additional 15 percent of available statewide water quality funding (\$1,250,000) to Bay work.
3. Improving Reporting, Record Keeping, and Data Systems (RRKD) to provide better and more accessible documentation of progress made toward Pennsylvania's restoration effort, including consideration of establishing mandatory reporting requirements for the agriculture sector in place of so-far unsuccessful voluntary reporting measures.
4. Identifying Strategic Legislative, Programmatic or Regulatory Changes (LPR) that will give Pennsylvania the additional tools and resources necessary to meet the 2025 Total Maximum Daily Load (TMDL) reduction goals.

5. Establishing a new Chesapeake Bay Office within DEP to assure the proper development, implementation and coordination of the Commonwealth's efforts for restoration of the Chesapeake Bay, and administering DEP's Chesapeake Bay Program grant.
6. Obtaining additional resources for water quality improvement by participating in planning a new round of "Growing Greener" funding, which will have Bay compliance as a primary goal, potentially making available several hundred million dollars to devote to local water quality issues and ultimately Bay compliance.

To implement these essential recommendations, this paper proposes 13 specific actions, immediate resource requirements, and 20 longer term proposed actions to improve water quality in Pennsylvania and meet Pennsylvania's goal in support of restoring the health of the Chesapeake Bay. Pennsylvania is committed to completing the 13 priority tasks described below within the next 18 months.

INTRODUCTION

Since 1985, Pennsylvania has invested more than \$4 billion through various loan and grant programs toward Chesapeake Bay restoration efforts. That investment has resulted in a 25 percent phosphorous reduction, 6 percent nitrogen reduction and nearly 15 percent sediment reduction.

Since 2011, Pennsylvania has, according to the EPA progress analysis using the Chesapeake Bay model, significantly reduced its discharges of nutrients from point sources such as wastewater treatment plants. Data show that Pennsylvania is on track for meeting phosphorous reduction goals. However, those same data show Pennsylvania is not meeting nitrogen and sediment goals. Pennsylvania must change its approach for the Chesapeake Bay.

DEP has worked with partners and stakeholders to develop several short, mid and long-term recommendations, aimed at augmenting our approach to water quality improvements in the Chesapeake Bay watershed. While all these recommendations are of importance, Pennsylvania is committed to completing the 13 priority tasks described below within the next 18 months.

A detailed implementation work plan is being developed as a separate document that will identify specific objectives and deliverables to insure successful completion of each task.

This work will also inform DEP's development of recommendations for a possible Growing Greener 3 initiative by the Wolf Administration.

BACKGROUND

Half of the land area of Pennsylvania drains to the Chesapeake Bay from four major river basins, and Pennsylvania comprises 35 percent of the entire Chesapeake Bay Watershed. The Susquehanna River is the largest tributary to the bay, providing 90 percent of the freshwater flow to the upper bay and half of the total freshwater flow to the bay. Simply stated, the water quality of the Chesapeake Bay cannot be restored without Pennsylvania's support. But even more important, water quality in Pennsylvania must be restored.

In 2010, EPA established a TMDL to address chlorophyll-A, dissolved oxygen and clarity impairments within the bay. The mandatory pollutant reductions necessary to meet the TMDL goals must be achieved by the year 2025. The nutrient and sediment loading rates used to determine compliance with the TMDL are calculated from a suite of models that base the load reductions on the efficiencies and reductions expected through point-source load reductions (treatment plants) and the implementation of BMPs at nonpoint source locations.

The Chesapeake Bay Model uses a simulated hydrology, land cover data, population and Agricultural Census data, effluent and BMP data reported by states, and other data sources to characterize annualized loads delivered to the bay. Nonpoint loads are divided by sector (agriculture, urban runoff, septic, forests and atmospheric deposition) by the model through land use characterization and are calibrated to observed surface water quality data on a roughly 10-year interval.

For the nonpoint source sector, Pennsylvania collects cost-shared BMP data for the model from the Natural Resource Conservation Service (NRCS) (85 percent) and other state grant programs (15 percent). The federal data are provided by the U.S. Department of Agriculture (USDA) through agreement with the U.S. Geological Survey (USGS), and the state BMPs are collected annually from multiple grant and permitting programs across multiple departments. These data are submitted annually to the EPA.

Pennsylvania's progress in meeting the TMDL goals is tracked through the development of two-year milestones (currently 2013-2015), which estimate the expected level of implementation of BMPs and expected programmatic improvements to occur over the milestone period. A TMDL Mid-point Assessment will be made in 2017. EPA expects that this assessment will show that 60 percent of load reductions needed to reach the TMDL will have been put in place.

According to EPA, Pennsylvania has committed to reduce its urban/suburban stormwater load for nitrogen by 41 percent, phosphorus by 45 percent and sediment by 50 percent by 2025. For this sector to date, Pennsylvania has reduced nitrogen loads by 1 percent, phosphorus loads by 10 percent and sediment loads by less than 1 percent.

Failure to meet milestone implementation targets has triggered backstop actions by EPA for Pennsylvania's agriculture and urban runoff sectors. EPA's backstop measures could include expansion of point source permitting, permit application objections, re-direction or conditioning of federal grants, increased EPA enforcement, among other possible measures. Table 1 below illustrates the current status of our modeled loads and targets, and indicates that Pennsylvania will likely not meet 2015 and 2017 reduction targets.

Table 1. Pennsylvania Loads and Goals

(3/18/15)

NITROGEN		2009	2014	2015	2015	2017	2025
		Progress	Progress	Milestone	Target	Target	Target
Jurisdiction	Source	(M lbs /year)	(M lbs /year)	(M lbs /year)	(M lbs /year)	(M lbs /year)	(M lbs /year)
PA	Agriculture	62.66	65.10	55.03	50.47	46.41	35.58
PA	Urban Runoff	17.41	17.44	16.68	14.19	13.12	10.26
PA	Wastewater+CSO	12.14	9.81	9.80	10.69	10.21	8.92
PA	Septic	2.33	2.55	2.13	2.07	1.98	1.74
PA	Forest+	22.10	22.11	22.00	22.27	22.33	22.49
PA	All Sources	116.64	117.01	105.64	99.70	94.05	79.00
PHOSPHORUS		2009	2014	2015	2015	2017	2025
		Progress	Progress	Milestone	Target	Target	Target
Jurisdiction	Source	(M lbs /year)	(M lbs /year)	(M lbs /year)	(M lbs /year)	(M lbs /year)	(M lbs /year)
PA	Agriculture	2.716	2.564	2.535	2.311	2.176	1.816
PA	Urban Runoff	0.767	0.696	0.602	0.613	0.561	0.424
PA	Waste water +CSO	1.071	0.758	0.750	0.992	0.966	0.897
PA	Forest+	0.431	0.421	0.430	0.433	0.433	0.435
PA	All Sources	4.984	4.438	4.317	4.348	4.136	3.571
SEDIMENT		2009	2014	2015	2015	2017	2025
		Progress	Progress	Milestone	Target	Target	Target
Jurisdiction	Source	(M lbs /year)	(M lbs /year)	(M lbs /year)	(M lbs /year)	(M lbs /year)	(M lbs /year)
PA	Agriculture	1,677	1,695	1,398	1,414	1,326	1,092
PA	Urban Runoff	560	519	436	433	391	278
PA	Waste water+CSO	21	25	16	96	121	187
PA	Forest+	386	379	378	387	388	389
PA	All Sources	2,644	2,618	2,229	2,330	2,225	1,945

Source: EPA Chesapeake Bay Program

	Loads meet 2014 trajectory target.
	Loads don't meet 2014 trajectory target but are within 5%.
	Loads don't meet 2014 trajectory target by relatively large amount.

THE CURRENT SITUATION

A total of \$2,896,723 of federal funding for Chesapeake Bay work is currently being withheld until the Commonwealth meets EPA expectations. (*See Appendix 1.*) EPA has identified progressive options would likely be pursued “if it is necessary to ramp up federal actions to address the PA Bay restoration shortfalls.”(*See Appendix 2.*)

The current Chesapeake Bay effort within DEP is fundamentally based on spotty reporting, inadequate data and systems, and an overwhelming reliance on cost-shared installation of BMPs. In FFY 2014, \$146.6 million (combined state and Federal funding) was spent on programs to address nitrogen, phosphorus and sediment reduction statewide. Of this \$146.6 million, \$127.6 million, or 87 percent, was used for BMP deployment, with the remaining \$18.9 million going to personnel and operations (including Conservation District operations). See Appendix 3.

The average cost-share on BMP installation is 75 percent government (state and/or federal), and the average cost per farm for BMP installation is \$42-45K per BMP.

The agricultural community maintains that farmers are putting BMPs on the ground that could be credited against Bay requirements. However, this is merely an assertion. Farms, while being regulated entities, are not required to annually report this information, and voluntary reporting

has been and continues to be attempted. However, farmer self-reporting of data is not a preferable method for Bay data collection, due to the complex nature of the definition of some BMPs. More important, unverified data typically cannot be counted in the bay model. As a result, considerable funds and even more energy are expended annually by state and federal agencies to attempt to estimate the number and kind of non-cost-shared BMPs that are being installed. For example:

- The Natural Resource Conservation Service (NRCS), USDA and DEP are collaborating on a remote sensing pilot project, costing \$431,000, to determine if non-cost-shared BMPs can be documented through the use of aerial imagery.
- A transect survey pilot project in five counties is underway to estimate (at a confidence interval of 90 percent) data on the use of cover crops. \$138,000 was spent in FY 2013/2014 and an additional \$168,000 for 2015/2016.; totaling \$306,000.
- In 2009, DEP contracted with Bradford and Lancaster county conservation districts to determine the level of non- cost shared BMPs in their counties. The total cost was about \$75,000. The results of the project were useful, but more anecdotal than data. The projects did not result in data that was reported into the Bay model.
- The Pennsylvania Association of Conservation Districts (PACD) Manure Management Self-Reporting project includes \$15,000 for the development, promotion and management of a voluntary self-reporting project.

Reliable, verified and usable data are needed to document compliance with regulatory requirements, document the true extent of Pennsylvania's progress in improving water quality, and to inform programmatic and investment decisions. Continued reliance on voluntary reporting and costly estimation techniques of indeterminate accuracy result in continued high levels of state and Federal expenditure, could result in underreporting of Pennsylvania farm efforts to improve water quality, and seriously hamper the Commonwealth's ability to make informed policy decisions on which to take effective action.

Targeted reporting that meets DEP regulatory requirements under the Clean Streams Law; i.e. Ag Erosion and Sediment Control (E&S) Plans and Manure Management Plans, should be the initial focus. Most of the BMPs that DEP would report into the Bay model could be collected from these plans. The data collected, coupled with verification by inspection and compliance assurance activities, will allow the Commonwealth to gather reportable, Bay model-countable data and will result in real improvement in water quality in Pennsylvania, and in the Chesapeake Bay.

Compliance assurance activities have been the missing piece in creating a culture of compliance. DEP currently deploys a total of 33 Full-Time Equivalent hours (FTEs) to all Bay work, totaling \$2.8 million (\$1.5 million General Fund, \$1.3 million Federal and Special Funds). Of that total, however, only six positions are devoted to inspections. (*See Appendix 4.*)

MOVING FORWARD – THE RECOMMENDATIONS

This paper proposes 13 specific actions grouped among five recommendations, which are presented below in order of priority:

1. **Addressing Pollutant Reduction Deficiencies (PRD)** realized thus far for the agriculture and stormwater sectors with focused compliance and enforcement efforts and multi-agency assistance.
2. **Focusing on Local Water Quality Improvement and Protection (LWQ)** by locating and quantifying previously undocumented BMPs, and putting new high-impact, low-cost BMP projects on the ground in watersheds that are currently impaired by agriculture or stormwater.
3. **Improving Reporting, Record Keeping, Data Systems (RRKD)** to provide better and more accessible documentation of progress made toward Pennsylvania's restoration effort, including the establishment of mandatory reporting requirements for the agriculture sector in place of so-far unsuccessful voluntary reporting efforts.
4. **Identifying Strategic Legislative, Programmatic or Regulatory Changes (LPR)** that will give Pennsylvania the additional tools and resources necessary to meet the 2025 TMDL reduction goals; given the understanding that Pennsylvania will not meet, but intends to improve the progress toward, the 2017 Mid-point Assessment targets.
5. **Establishing a new Chesapeake Bay Office within DEP** to assure the proper development, implementation and coordination of the Commonwealth's efforts for restoration of the Chesapeake Bay, and administering DEP's Chesapeake Bay Program grant.
6. **Obtaining Additional Resources for Water Quality Improvement** by participating in planning a new round of "Growing Greener" funding, which will have Bay compliance as a primary goal, potentially making available several hundred million dollars to devote to local water quality issues and ultimately Bay compliance.

In addition, this paper presents 20 additional longer-term recommendations for consideration as the Phase 3 Chesapeake Bay WIP is developed. (*See Appendix 5.*)

The success or failure of the Chesapeake Bay Restoration must be a multi-faceted approach. It cannot be dependent upon the success or failure of DEP alone. Pennsylvania agencies and all Pennsylvanians in the Chesapeake Bay watershed must be engaged in protecting and restoring local water quality.

Addressing Deficiencies (PRD)

Pennsylvania recognizes that over the next 18 months shortfalls in pollutant reductions achieved thus far within the agricultural and urban sectors need to be addressed. This can only be

accomplished with a multi-faceted approach that utilizes the resources of all agencies. With this in mind, the following recommendations are offered for these two sectors.

Agriculture

PRD1. Implement the following Agricultural Compliance and Enforcement Strategy to maximize results. This is modelled after the successful approach used by DEP's North Central Regional Office, which was cited as exemplary by EPA.

To help farmers do the right thing to improve Pennsylvania's water quality, Pennsylvania intends to establish an initial policy of compliance by focusing on planning requirements. DEP will:

1. Enlist the services of the County Conservation Districts' (CDs) staff to assist with inspections of farms to a) assure that everyone who is required to have plans to be in regulatory compliance has all the necessary plans applicable to their farming operation, and b) inspect 10 percent of all farms in the Bay watershed annually. This will be accomplished by:
 - a. Elimination of the CDs' current Chesapeake Bay Watershed Funding Agreement requirement to conduct 100 farm educational visits, and replace them with 50 Manure Management and Agricultural E&S Plan inspections, supplemented with an unfunded BMP data collection activity.
 - b. Purchase of World View Software for each Conservation District so they can report inspection and BMP data in a timely and consistent manner.
 - c. Utilization of Penn Ag Industries, county newsletters, Farm Bureau and others in the agricultural community to announce the strategy and schedule.
 - d. Prioritization of the effort by county within each region based on total agricultural loading to the Bay.
2. In preparation for implementation of this strategy, DEP will:
 - a. Send a letter to the private sector entities currently involved in the development of these plans.
 - b. Meet with agricultural community partners.
3. To maximize resources, existing roles will need to be modified and clarified as follows:
 - a. Private sector does plan development.
 - b. Conservation districts provide technical and compliance assistance. Where Districts accept the appropriate delegation, they may pursue enforcement activities.

- c. DEP does enforcement where it may be needed.
- d. Public assistance for plan development will be severely limited.
- 4. Documentation of compliance with an emphasis on plans will be done by routine inspections within the Bay watershed. Results will be announced frequently through regular press releases. A tiered approach will be used to assess the severity of violations and a corresponding penalty.

PRD2. Implement a methodology to count, report and verify BMPs that are installed voluntarily, without state or federal cost-share assistance, using the BMP tracking system developed using the following basic premises:

- 1. Enlist the support services of the PA Farm Bureau and Penn Ag Industries to survey farms in the manner similar to what is proposed in Appendix 6.
- 2. Farmers who have voluntarily implemented manure management plans and non- cost-shared BMPs will report these practices to the PACD. This effort includes both historical data and the collection of data moving forward. PennAg Industries and the Farm Bureau will be contacted for their support as marketing partners. This will be done through the PACD website at <http://pacd.org/selfreport>.
- 3. At a minimum, 10 percent of the practices reported will be verified by conservation districts.
- 4. The following need to be addressed:
 - a. The problems with NRCS concerning the confidentiality clause contained in Section 1619 of the 2008 Farm Bill which prohibits disclosure of certain information to DEP by USDA and NRCS.
 - b. If voluntary reporting proves unsuccessful or inadequate to provide model-reportable data, DEP will consider the establishment of mandatory reporting requirements for the Ag sector.

Urban Stormwater

There is a need to re-evaluate the Chesapeake Bay Phase 2 WIP for achieving reductions from the urban sector and the reduction allocations for this sector. Since this cannot happen until the Mid-point Assessment and the development of the Phase 3 WIP, the implementation of the following recommendations will be the focus for the next 18 months for this sector:

PRD3. Continue outreach and program development for the Municipal Separate Storm Sewer Systems (MS4) to include:

1. Finalization of the MS4 General Permit (PAG-13) to include percent reductions for nitrogen, phosphorus and sediment.
2. Development of additional handbooks, guidance materials, etc. as needed.
3. Periodic, at least annual, workshops and training events on program requirements and the essential elements of the program, including the development of Pollutant Reduction Plans and TMDL Plans. Supplement these with webinars and web-based training as needed.
4. Implementation of a circuit rider program to provide one-on-one technical assistance to municipalities in the development and implementation of a program to address the minimum control measures for a MS4 Program. These circuit riders will be part-time employees of DEP who are subject experts and involved in local MS4 programs in their respective communities. Note that this step is dependent on the availability of additional resources.
5. Development and implementation of a small grant program to provide between \$25,000 and \$50,000 to local municipalities to cover a percentage of the costs to evaluate the feasibility of creating a stormwater authority and/or the creation of a framework for assessing and collecting fees for the management of stormwater. Up to an additional \$75,000 will be provided to cover a percentage of the initial administrative costs if an authority or actual fee structure is created and implemented. The total amount of assistance to one entity shall not exceed 75 percent of the total costs incurred. **Note that this step is dependent on the availability of additional resources.** DEP is aggressively pursuing those resources in consultation with EPA.
6. Development and implementation of a cost-share program for the development of Chesapeake Bay Pollutant Reduction Plans and the implementation of stormwater management BMPs associated with MS4s. Note that this step is dependent on the availability of additional resources.

PRD4. Develop a methodology to allow those MS4s that have documented, verified urban BMPs installed as part of the Pollutant Reduction Plans and MS4 annual reports between 2006 and now to get credit for the reductions those practices have achieved as part of the required percent reduction after 2018. **Note that this recommendation is only possible if staffing and resources are added.**

PRD5. Enforce the statutory requirements of the Pennsylvania Storm Water Management of 1978 (Act 167) pursuant to DEP's authority under the Act, and ensure the requirements of Act 167 are met by:

1. Notifying those counties and municipalities that are not in compliance with Act 167 of their obligations pursuant to the statute.

2. Implementing a training and outreach program to counties and municipalities on the requirements and timeline for compliance.
3. Developing and implementing a compliance and enforcement strategy with achievable timelines to bring recalcitrant counties and municipalities into compliance.
4. Ensuring that model ordinances developed for implementation of Act 167 plans address erosion and sediment best management practices, especially within the Chesapeake Bay Watershed. **Note that this recommendation is dependent on additional financial and staffing resources (See LPR10 below).**

Focusing on Local Water Quality Improvement and Protection (LWQ)

Improving local water quality will ultimately restore the water quality of the Chesapeake Bay. To achieve local water quality improvement, a comprehensive, focused approach, implemented with local support, is essential. With this in mind, the following recommendations are offered:

LWQ6. Implement targeted efforts in impaired watersheds where the cause listed is either agricultural or urban stormwater, and where geography and land use are amenable to successful BMP implementation, that lead to quick results in gaining attainment status. These watersheds should be in an area where there is an interested local group ready to take the lead on implementation of the initiative. Federal and state cost-share dollars should be focused in these watersheds for implementation, and 15 percent of available statewide water quality funding – totaling \$1,250,000 (\$750,000 from Growing Greener and \$500,000 from the 319 Program) – will be shifted to Bay work.

LWQ7. Partner with local agencies to achieve on-the ground implementation of BMPs, e.g. the partnership with the Fish and Boat Commission, the Northcentral Pennsylvania Conservancy and the Conservation Districts in the DEP Northcentral Region, to install stream restoration measures.

Improving Record Keeping and Data Systems (RKD)

Reliable Reporting, Record Keeping, Data Systems (RRKD) to provide better and more accessible documentation of progress made toward Pennsylvania's restoration effort includes the establishment of mandatory reporting requirements for the agriculture sector in place of so-far unsuccessful voluntary reporting efforts. With this in mind, the following recommendations are offered:

RKD8. Design and build a BMP Data Management System. Key points about the system include:

1. The core of the system will be a geo-located entry of actual BMP information. The key to this is to ensure that no BMP can be entered more than once.
2. There will need to be multiple points of access into the system.

3. The core record will contain all of the information about the BMP (how long, how tall, how wide, acres managed, pounds removed of Total Nitrogen, Total Phosphorus, sediment), and the ancillary tables will contain the information specific to the different programs.

RKD9. Establish reporting requirements for Ag E&S and Manure Management Plans in the agriculture sector, and provide the CDs with tools (Worldview) to capture these data. (*See Appendix 6.*)

Identifying Strategic Legislative, Programmatic or Regulatory Changes (LPR)

Pennsylvania may need legislative, programmatic or regulatory changes to build the additional tools and resources necessary to meet the 2025 TMDL reduction goals; given the understanding that Pennsylvania will not meet, but intends to improve the progress toward, the 2017 Mid-point Assessment targets. The following recommendations are proposed:

LPR10. Request the General Assembly to restore funding for the statutory requirements of the Pennsylvania Storm Water Management of 1978 (Act 167), as well as additional staff for DEP.

LPR11. Develop a permitting methodology for use by Publicly-Owned Treatment Works (POTWs) and MS4 communities to combine cap loads and required reductions for both entities within one permit, thus facilitating the POTW to achieve all or a percentage of the MS4s assigned reductions through effective operation of the POTW or allowing the POTW to further expand capacity at the plant without further infrastructure upgrade through the implementation of stormwater controls to the MS4s.

LPR12. Assign cap loads to individual agricultural operations, much the same way POTWs are permitted with defined limits. To accomplish this, the loading for well-run farming operations would need to be calculated. Define the most effective technologies needed to achieve these loadings, such as manure treatment technologies. The development of a permitting program for these operations would be needed.

LPR13. Document, through business case development, the additional funding needed for staffing increases and cost-share programs necessary to make this plan implementable. This includes working with the Office of the Budget and the General Assembly to achieve the needed results.

In Pennsylvania, the measure of success will be the restoration of local water quality that will ultimately assist with the restoration of the Chesapeake Bay. Pennsylvania needs to be actively involved and vocal at all Chesapeake Bay Program workgroup and committee meetings. To accomplish this, and to ensure the right combination of agency participation is representing Pennsylvania on the various workgroups and committees involved with the Chesapeake Bay Program, DEP needs to re-evaluate the existing membership and make revisions as appropriate. As part of this effort, specific roles and responsibilities for any additional members will be defined. Finally, recognizing that the Chesapeake Bay Watershed Model is the mechanism by

which EPA and the Chesapeake Bay Program partners measure and document progress, Pennsylvania needs a clear, concise understanding of how the model works, the current issues with the model that prevent a complete comprehensive reflection of Pennsylvania progress and what needs to be done in order to resolves these issues.

RESOURCE NEEDS

Commonwealth agencies do not have the staffing or the cost-share assistance resources needed to meet Bay goals. This section presents a summary of the essential numbers.

Agriculture

The Bay watershed is home to 33,610 farms. Three hundred of those are Concentrated Animal Feeding Operations (CAFOs). EPA recommends that DEP inspect 10 percent of farms annually. However, DEP currently has six agriculture program inspectors in the Bay watershed (3 funded by General Fund, 3 Federally funded), and only three of those are committed to Bay work. In 2014, DEP conducted 242 CAFO inspections, and 350 non-CAFO inspections. The total of 592 inspections equates to a 1.8 percent inspection rate, only 17.6 percent of EPA's recommended level of 10 percent, or 3,360 inspections per year.

Urban Stormwater

The Bay watershed has 206 MS4 communities. The total number of site/permits = 10,000, with a total of 55,000 BMPs currently on the ground. These are primarily derived from new construction and redevelopment. EPA's Goal is for DEP to inspect 10 percent of the sites per year (all BMPs), or 21 full MS4 inspections per year. DEP has 16 staff who contribute to MS4 inspections, but 0 (zero) MS4 inspectors dedicated to the Bay or the program statewide. In 2014, DEP conducted 80 partial MS4 inspections (25 field inspections and 55 annual desk report reviews).¹

¹ In addition, DEP and CD Staff review hundreds of permit applications related to post-construction stormwater management (PCSM) from new development projects in the Bay watershed each year. The majority of these applications are for stormwater discharges in municipalities that do not have local ordinances developed pursuant to plans developed and approved under Act 167. Adequate planning and consistent BMP implementation under such ordinances would greatly reduce sediment loads to the Bay from this new development.

Presented below in Table 2 is a summary of DEP and CD staffing needs to meet EPA inspection expectations and implement the recommendations contained in this paper.

Table 2

Entity	Type of Inspection	# of Yearly Inspections	Comments
DEP Regional Office	CAFO	242 Farms	Existing DEP staff
DEP Regional Office	Non-CAFO	350 Farms	Existing DEP staff
Conservation. Districts (CD) and State Conservation Commission (SCC)	Act 38 CAOs (minus CAFOs)	376 Farms	Concentrated Animal Operation inspections overlap with DEP CAFO inspections due to CAFO Nutrient Management (NM) Plan requirements.
CDs and SCC	Act 38 VAOs	218 Farms	CDs inspect 1/3 of all NM Volunteer Agricultural Operations each year.
	Sub-Total	1,186 Farms	With existing staff and resources
<u>Redirecting Existing</u>	<u>Capacity as Follows</u>		
Cons. Districts	MM & AG E&S Inspections, plus Unfunded BMP Data Collection	1,750 Farms	This proposal would <u>eliminate</u> CDs current CB WS Funding Agreement requirement to conduct 100 farm educational visits, and replace it with 50 MM/AG E&S inspections, supplemented with an unfunded BMP data collection activity. This would help meet both the EPA 3360 inspection mandate, <u>PLUS</u> the short-term push to collect unfunded BMP data. This effort should include the purchase of World View Software for each CD so they can report inspection and BMP data in a timely & consistent manner.
<u>Adding Additional</u>	<u>Capacity as Follows</u>		
DEP RO	5 New Inspection FTEs	500 Farms	CB WS based farm inspectors
	Sub-Total	3,436 Farms	<u>Exceeds EPA 3,360 mandate by 76 farm inspections per year.</u>
DEP RO	3 New Support Staff	N/A	Support and oversee regional operations
DEP CO	2 New Support Staff	N/A	Support CO administrative/technical duties.

Table 3 – DEP Staff Needs

Work Done	Proposed Increase In DEP Staff
	FTEs
Program Oversight, Coordination	2
Interaction with EPA and Bay Program Office, Watershed Model, BMP Verification	
Agriculture	
Program Implementation (Supervision)	3
Program Development	1
Inspections & Enforcement	5
Grant Management	1
Subtotal (Agriculture)	12
Stormwater	
Program Development	1
Inspections & Enforcement	3
Legal	1
Administrative Support	1
Subtotal (Stormwater)	6
Compliance Assistance and Enforcement	1
Program Development	1
Grant Management (should funding happen)	1
Subtotal (Act 167 Stormwater Planning)	3
Permitting & Plan Review	1
Report Reviews, Inspections and Enforcement	1
Program Management	1
Subtotal (MS4 Program)	3
Total	24

Establishing a new Chesapeake Bay Office within DEP

To assure the proper development, implementation and coordination of the Commonwealth's efforts for restoration of the Chesapeake Bay, and administering DEP's Chesapeake Bay Program grant, a new Chesapeake Bay Office will be established within DEP.

Obtaining Additional Resources for Water Quality Improvement to Meet Bay Goals

The most reliable estimate of the amount of resources required to fully implement nonpoint source BMPs called for in Pennsylvania's WIP is contained in **The Pennsylvania State University Environmental and Natural Resources Institute Report, August 2013**², which provides two estimates. The first estimate shows a need of \$3.6 billion in capital costs to fully implement all nonpoint source BMPs in the WIP, in incremental levels between 2011 and 2025. The second estimate annualizes costs through 2025, to include O & M, resulting in a figure of \$378.3 million per year.

To obtain additional resources for water quality improvement in the longer term, the administration is in the planning stages of a new round of "Growing Greener" funding, which will have Bay compliance as a primary goal. This program will potentially make available several hundred million dollars in the near term to devote to local water quality issues and ultimately Bay compliance.

MOVING FORWARD

Table 4 presents a proposed Implementation Schedule. Appendix 5 presents 20 additional longer-term recommendations for consideration as the Phase 3 Chesapeake Bay WIP is developed.

² http://www.usda.gov/oce/environmental_markets/files/EconomicTradingCBay.pdf

Table 4 - Timing

Initiative	Timing
1. Addressing Pollutant Reduction Deficiencies by meeting the EPA goals of inspecting 10 percent of farms in the Bay watershed annually, with increased inspection and compliance efforts in the agriculture sector using existing DEP and Conservation District staff, and with continued DEP outreach and program development for urban stormwater systems.	<p>a. Finalize agreements with Conservation Districts to substitute 50 inspections for current 100 educational visits – December, 2015</p> <p>b. Add 24 FTEs for inspection, program development in FY 2016-2017 - June 2016</p>
2. Focusing on Local Water Quality Improvement and Protection (LWQ) by locating and quantifying previously undocumented BMPs, and putting new high-impact, low-cost BMP projects on the ground in watersheds that are currently impaired by agriculture or stormwater by shifting an additional 15 percent of available statewide water quality funding (\$1,250,000) to Bay work.	<p>c. Voluntary Manure Management reporting tool live October, 2015</p> <p>d. Agreements with PA Farm Bureau, PennAg finalized December 2015 for 2016 implementation</p> <p>e. Funding shift to Bay work – November 2015</p>
3. Improving Reporting, Record Keeping, and Data Systems (RRKD) to provide better and more accessible documentation of progress made toward Pennsylvania's restoration effort, including consideration of establishing mandatory reporting requirements for the agriculture sector in place of so-far unsuccessful voluntary reporting measures.	<p>a. Complete acquisition of Woldview reporting tool – December 2015</p> <p>b. Evaluate success of voluntary reporting – June 2016</p>
4. Identifying Strategic Legislative, Programmatic or Regulatory Changes (LPR) that will give Pennsylvania the additional tools and resources necessary to meet the 2025 Total Maximum Daily Load (TMDL) reduction goals.	October 2016

<p>5. Establishing a new Chesapeake Bay Office within DEP to assure the proper development, implementation and coordination of the Commonwealth’s efforts for restoration of the Chesapeake Bay, and administering DEP’s Chesapeake Bay Program grant.</p>	<p>November 2015</p>
<p>6. Obtaining additional resources for water quality improvement by participating in planning a new round of “Growing Greener” funding, which will have Bay compliance as a primary goal, potentially making available several hundred million dollars to devote to local water quality issues and ultimately Bay compliance.</p>	<p>February 2016</p>

Appendix 1

Loss of Federal Funding

A total of \$2,896,723 of federal funding for Chesapeake Bay work is being withheld until the Commonwealth meets the expectations described below.

Fiscal Year 2015 (FY15) Chesapeake Bay Implementation Grant (CBIG) Work Plan and Budget

From the FY15 CBIG award, \$1,685,033 is not being funded unless DEP provides a plan to increase the agriculture cost-share program and demonstrates how funding will be targeted to high-priority conservation practices in high-priority watersheds.

FY15 Chesapeake Bay Regulatory and Accountability Program (CBRAP) Grant Work Plan and Budget

From the FY15 CBRAP award, \$1,211,690 for is not being funded unless DEP provides a plan to address the following matters:

- **Nutrient Management Compliance Assistance**
 - Demonstrate a commitment to the “culture of compliance.”
 - Quantify and conduct additional random non-CAFO/non-CAO inspections to annually cover 10 percent of the universe of farms starting in 2016.
 - Provide a quantitative goal to demonstrate the conservation districts’ role in conducting inspections outside of the regional watershed assessment areas.
 - Modify the Conservation District Delegation Agreement in 2016 versus 2017.
 - Fill gaps in implementing its non-CAFO Compliance Monitoring Strategy with additional Pennsylvania staff under Objective #2 for FY2016.
 - Provide a plan to ramp up implementation and compliance with Manure Management plans.
- **Improved Tracking and Accountability**
 - Remedy deficiencies in Pennsylvania’s databases to fully track farm visits, compliance, inspections, and BMP implementation.
- **Technical Assistance Program.** EPA is not funding \$500,000 for this objective unless PADEP provides a plan to:

- Increase the number of nutrient management plans to be implemented on an annual basis.
- Specify what tier of nutrient management plans will be targeted.
- Specify the priority areas that will be targeted for nutrient management plan implementation.
- Specify the timeline/schedule for electronic self-reporting of manure management plans and BMPs, as well as when these BMPs will be inspected and verified.

Appendix 2

Addressing PA Gaps in Chesapeake Bay Restoration – Options Paper

(EPA document received 9/17/15)

The following options would likely be pursued in the approximate order shown if it is necessary to ramp up federal actions to address the PA Bay restoration shortfalls.

- **EPA funding redirections and withholding:** EPA would partially award Bay CBIG and CBRAP funds to Pennsylvania and direct workplan content to the specific EPA's expectations identified to Pennsylvania from our evaluations of milestone progress. Grant funding could then be permanently withheld (50 percent and future years funding) and then used by EPA directly to fund on-the-ground project work to implement the WIP/Milestones.
 - Starting Point: Make 50 percent award of grant funds for FY 15 and then make permanent the grant reductions and redirect to direct EPA implementation actions on PA behalf. Specifics to come.
 - Stop special EPA project funding to PA (e.g., MS4/SW solutions).
- **Conduct greater numbers of AG watershed assessments (e.g., high-priority farms):**
 - EPA would directly contract for field work to assess rates of compliance with state and federal requirements of animal Ag operations in Pennsylvania.
 - Possibly support 3-6 watersheds per year targeted to the highest nutrient loading rate watersheds in the Bay drainage; would require EPA staff presence in the field.
- **Increase EPA compliance and enforcement presence in Pennsylvania:** Escalate EPA presence in the Chesapeake Bay watershed portion of the Commonwealth by inspecting regulated sources.

- **Enhanced NPDES Permit Review**
 - **Revoke waiver for permit review of classes of minor sources in the Chesapeake Bay Watershed** (i.e., potential review of minor permits to require nutrient monitoring, to offset increased capacity, etc.).
 - **Takeover of permits if objections not addressed in 90 days**
 - Object to NPDES permits which do not conform to the TMDL; after 90 days of unresolved objections, EPA can assume control of the issuance of those permits.
 - PAG-13 Storm Water General Permit would be a prime candidate if changes are not made to the permit EPA previously reviewed.
 - Significant Wastewater Treatment Plant (WWTP) permits could be objected to if the TMDL Wasteload Allocation (WLA) is change – see TMDL Allocation option, below.
- **Seek to designate nonpoint sources as point sources**
 - **Animal Feeding Operation (AFOs) as CAFOs:**
 - Animal Ag operations that are assessed in the field could be designated on an individual facility or sub-watershed basis after the gathering of field data to demonstrate the impairment link.
 - Beginning the process to designate would allow for public input and generate a dialogue about the adequacy of state programs and coverage of the ag universe.
 - **Unregulated stormwater sources**
 - Conduct assessment of classes of sources (e.g., parking lots) causing or contributing to water quality impairments.
- **Modify the Pennsylvania-specific TMDL allocations to sources and sectors:** Adjust TMDL allocations in Pennsylvania only to present more achievable options.
 - **Refine the urban load allocations:**
 - Transfer some portion of the regulated and unregulated urban load to another sector.
 - Options – Modify Traditional WWTPs or Ag CAFO or Ag sector generally.

- **Greater pollutant reductions from significant wastewater treatment plants:**
Ratchet down levels of controls for significant wastewater facilities from 6 mg/l TN to 3 mg/l (note that this reduction would achieve about 3.6 million pounds of nitrogen reduction).
- **Non-significants:** Impose WLAs on Non-Significant sources throughout Pennsylvania Bay watershed at some lower level than 400,000 gallons per day.
- **Water quality standards adoption:** EPA could federally promulgate nutrient criteria for local streams in Pennsylvania – similar to the action EPA took in Florida to address serious nutrient impairment issues. Requires a finding that state standards are not sufficient to protect the use. (Intensive EPA Headquarters support required.)
 - This would establish enforceable numeric limits for P and N that must be included in NPDES permit limits where there is a reasonable potential for discharge.
 - Local P limits are likely to be a lot tighter than that required for Bay protection alone.

Appendix 3: Nonpoint Source Funding Programs

(Source: 2014 Pennsylvania's Nonpoint Source Annual Report)

State Sources (FY 2014)	N, P, Sediment Reduction Programs		AMD Remediation Programs	
	Personnel / Operations	BMP Deployment	Personnel / Operations	BMP Deployment
DEP	(\$ millions)		(\$ millions)	
Conservation District Watershed Specialists	2.136			
Environment Stewardship and Watershed Protection (Growing Greener):				
Watershed Protection Grants		17.393		
AMD Set-aside Grants				2.031
Chesapeake Bay Grant:				
Technical and Eng Assistance				
Special Projects				
Conservation District Fund Allocation Program (line item plus UGWF monies)	4.381			
Dirt and Gravel Roads Pollution Prevention Program		20.854		
Abandoned Mine Reclamation Program Annual Projects				1.457
PA Infrastructure and Investment Authority (PENNVEST) – 2014 funds awarded by board		6.523		
Sub-total	6.517	44.77	0	3.488

PDA				
Nutrient Management Fund (Transfer)	2.714			
Conservation District Fund Allocation Program (line item plus UGWF monies)	2.744			
Resource Enhancement and Protection Tax Credits Available		10.000		
Sub-total	5.458	10.000	0	0
PUC				
Conservation District Funding from UGWF	3.750			
Sub-total	3.750	0	0	0
Commonwealth Financing Authority				
Act 13 NPS Funding (WR and AMD projects)		3.147		
Sub-total	0	3.147	0	0
State Funding Sub-total	15.725	57.917	0	3.488

Federal Sources (FY 2014)	N, P, Sediment Reduction Programs		AMD Remediation Programs	
	Personnel / Operations	BMP Deployment	Personnel/ Operations	BMP Deployment
U.S. Environmental Protection Agency	(\$ millions)	(\$ millions)	(\$ millions)	(\$ millions)
Section 319 Nonpoint Source Management Program	0.277	4.395		
Chesapeake Bay Grants:	2.925	1.977		
National Fish and Wildlife Foundation				
Chesapeake Bay Small Watershed Grant-annual Funding (PA-specific grants)		0.553		
Chesapeake Bay Innovative Nutrient and Sediment Reduction Grant (PA-specific grants)		1.916		
Sub-total	3.202	8.841	0	0
U.S.D.A. Natural Resources Conservation Service				
Agricultural Management Assistance		1.080		
Chesapeake Bay Watershed Initiative		0.0		
Environmental Quality Incentive Program		21.790		
Farm and Ranchland Protection Program		0.0		
Agric Cons Easement Program – Ag Land Easements		4.62		
Conservation Stewardship Program (new contracts)		0.350		
Conservation Stewardship Program (funds obligated to pay on prior year contracts)		6.180		
Grasslands Reserve Program		0.310		

Healthy Forests Reserve Program		0.660		
Wetlands Reserve Program		0.0		
Agric Cons Easement Program – Wetland Reserve Easements		3.860		
Wildlife Habitat Incentive Program		0.0		
Sub-total	0	38.850	0	0
U.S.D.A. Farm Service Agency				
Conservation Reserve Enhancement Program Includes Financial Incentives, Cost-Share and Rental Payments.		21.885		
Biomass Crop Assistance Program		0.013		
Grassland Reserve Program		0.150		
Sub-total	0	22.048	0	0
Office of Surface Mining				
AML Reclamation Funding Includes AML, Clean Streams Initiative and Watershed Cooperative Agreement Program.			16.71	35.65
Sub-total:	0	0	16.71	35.65
Federal Funding Sub-total	3.202	69.739	16.71	35.65
TOTAL	18.93	127.656	16.71	39.14

Appendix 4 – Summary of Current DEP Staffing for Chesapeake Bay Work

	FTE	General Fund	Federal, Special Funds	Total
Program Oversight, Coordination	5	\$349,772	\$191,201	\$540,973
Agriculture				
Program Management, Administration, Development, Implementation	7	\$471,393	\$300,815	\$772,215
Inspection & Enforcement (Regions)	6	\$164,078	\$382,848	\$546,932
Technical Assistance (Regions)	4	\$185,787	\$185,787	\$371,578
Subtotal, Agriculture	17	\$821,258	\$869,450	\$1,690,724.82
Post-Construction Stormwater				
Program Management, Development	1	\$116,178	\$17,495	\$133,673
Inspection and Enforcement	6	\$58,430	\$225,209	\$283,639
Subtotal, Post- Construction Stormwater	8	\$174,608	\$242,704	\$417,312
MS4 Program Stormwater				
Permit & Plan Review	2	\$79,188	\$23,974	\$103,162
Program Development	1	\$103,679		\$103,679
Subtotal, MS4 Program Stormwater	3	\$182,867	\$23,974	\$206,841
GRAND TOTALS	33	\$1,528,505	\$1,327,329	\$2,855,851

APPENDIX 5 – ADDITIONAL LONG-TERM RECOMMENDATIONS

Presented below are 20 additional longer term recommendations for consideration as the Phase 3 Chesapeake Bay WIP is developed. These recommendations are categorized as follows:

- Changing the Conversation by moving from “education” to “action”, by engaging more meaningfully with EPA, all governmental agencies involved in restoring the Chesapeake Bay, other program stakeholders and the citizens of Pennsylvania. This means redefining roles and responsibilities to build a stronger Pennsylvania partnership to achieve water quality goals.
- Focusing on Local Water Quality Improvement and Protection by putting science-based, high-impact, low-cost projects on the ground and working with partners in a focused manner.
- Addressing Deficiencies for the agriculture and stormwater sectors with multi-agency assistance, compliance and enforcement efforts.
- Showcasing Progress and Improving Transparency by modernizing and improving record keeping and data systems.

CHANGING THE CONVERSATION

CC1. Accelerate the installation of forest, riparian buffers using existing programmatic authority and programs such as the DCNR Rivers Program, Recreation and Conservation Grants Program and Tree Vitalize Program.

CC2. Strengthen the Nutrient Credit Trading program to fully implement the concepts of 3rd party verification.

CC3. Leverage the Act 162 requirements for the development of buffers within the Chesapeake Bay. Evaluate the creation of an “in lieu” program, or expand the existing Nutrient Credit Trading Program to facilitate this.

ADDRESSING DEFICIENCIES

Agriculture

AD4. Implement an abbreviated version of the Regional Agriculture Watershed Assessment Program (RAWAPI) Program protocols using interns to focus on ag-impaired watersheds to conduct BMP verification and provide basic education about conservation plans and BMP implementation. This effort would be collectively used to identify the best areas in which to focus the more comprehensive effort the following season.

AD5. Continue implementation of conservation district “100 site visit program,” limiting efforts to ag-impaired watersheds and including a basic BMP verification effort. CD staff should continue to provide basic education about conservation plans and BMP implementation.

AD6. Partner with the Penn State Agronomy program, the NRCS, CDs and local nurseries to promote upland buffers in close proximity to poultry barns. These trees take up nitrogen, control dust and litter around the barn and can serve as a barrier to the spread of avian flu. Encourage larger funding from NRCS with state fund. These buffers are an approved tax credit.

AD7. Focus cost-share programs on the implementation of the following most effective BMPs and ensure the same minimum information on these practices is consistently collected from all programs:

1. Cover crops.
2. Tillage (no-till & conservation till).
3. Manure Transport.
4. Streambank fencing.
5. Buffers.

AD8. Revise the farmland preservation program to require manure management and nutrient management plans and agriculture conservation plans and their implementation.

AD9. Prohibit winter manure application unless conducted under an approved and certified nutrient management plan, unless in cases of extreme emergencies.

Urban Stormwater

US10. Re-evaluate the Chesapeake Bay Phase 2 WIP for achieving reductions from the urban sector by:

1. Reducing the reduction for the allocation for the urban sector to below 20 percent. Re-allocate this loading to agriculture.
2. Separating out the actual urban areas from the other land use categories, such as extractive lands, now included in this category within the Bay Watershed Model. Develop a timetable for addressing these lands through Abandoned Mine Land remediation activities and estimate a realistic reduction goal based on these reclamation efforts and existing funding levels.
3. Analyzing new construction activities vs. MS4 responsibilities to determine where reductions can be achieved effectively from each program:

- a. MS4s should take a bigger piece of the sediment and load and the total phosphorus that will come with the sediment. A 20 percent reduction in sediment for the 2018 PAG13 general MS4 permit may be feasible.
 - b. Overland flow and streambank erosion impacts need to be considered in the evaluation. Rate and volume controls will facilitate streambank erosion control, which is likely to be a much bigger contributor than overland flow to sediment loading.
 - c. Complete a modeling project using Mapshed to look at small urban fixes such as implementation of rain gardens, rain barrels to see what the effect is on stream bank erosion.
 - d. Total Phosphorus (TP) and Total Nitrogen (TN) reductions should rely on the associated sediment reduction and include a nominal additional goal.
 - e. Allow the nominal portion of the reduction to be assumed if a fertilizer ordinance is passed.
4. Considering the following post- construction stormwater management requirements:
- a. In addition to current requirements, insure that each new project makes a reduction equal to 20 percent removal of Sediment, TN and TP.
 - b. Rules for this established around existing land use that is being changed: Cutting down forest needs to result in a 20 percent improvement over the forested condition.

US11. Work with Penn State to create certification programs for the design, construction and maintenance of stormwater management BMPs for public works employees and contractors. The Program can be tailored after similar programs for Dirt and Gravel Roads and Agricultural Extension Certification Programs.

US12. Focus cost-share programs on the implementation of the following most effective BMPs and ensure the same minimum information on these practices is consistently collected from all programs:

1. Naturalized detention basins (cost effective).
2. Other volume and water quality BMPs to fit site specific needs such as pervious pavement, rain gardens, etc.
3. Stream bank restoration.

Wastewater

The wastewater sector is achieving its defined reduction goals for 2017. As a result, no recommendations for additional reductions from this sector are proposed. However, including the following in Phase 3 of the Chesapeake Bay WIP should be considered:

1. Including a benefit in NPDES permits for going “above and beyond” compliance.
2. Developing a cost-share program for the upgrade of POTWs to achieve Enhanced Nutrient Removal of 3 mg/L TN and 0.3 mg/l TP.

SHOWCASING PROGRESS AND IMPROVING TRANSPARENCY

SPIT13. Use social media such as Facebook, Twitter, etc. to showcase success.

IDENTIFYING STRATEGIC PROGRAMMATIC, LEGISLATIVE, OR REGULATORY CHANGES

Programmatic Changes

SPLRC14. Identify ways to consolidate state Financial Assistance Programs into a more cohesive, targeted and comprehensive package to reduce confusions for the agricultural community, and simplify funding stream for those technical assistance providers that work with farmers.

SPLRC15. Design and deliver programs to meet farmers’ needs and interests; considering their land-use values, animal health, and financial objectives/constraints. Specific ideas include:

1. Aesthetics – engage landscape architects to design riparian and upland buffers that are both functional and attractive.
2. Working/multifunctional buffers to give landowners greater flexibility – incorporate edible and marketable species within riparian and upland buffers. Expand buffer concept to include perennial crops such as alder or willow for biomass, or elderberry, pawpaw or *Aronia* (chokeberry) for farm or nutraceutical markets that, once established, can be grown and harvested with minimal soil disturbance.
3. Promote and assist with the establishment of Vegetative Environmental Buffers (VEBs) on livestock (poultry and swine) operations. Studies indicate that such buffers can mitigate both air and water pollution from concentrated animal operations, as well as inhibit the spread of certain viruses between barns.
4. Assist in the conversion of pasture to silvopasture, planting fast-growing species such as black locust or larch that can be used as non-treated posts for organic operations. Highlight the benefits of disbursed shade in pastures relative to nutrient and livestock management.

5. Promote and support buffer bonus concept for implementation of nutrient management plans to encourage establishment of permanent/perennial vegetative buffers along water corridors.

SPLR16. Create the Technology Fund proposed in Phase I WIP. Establish a supporting scientific review panel, much like expert panels established by the Chesapeake Bay Program, to review effectiveness of any proposed technology (This should not be a DEP-only responsibility).

SPLR17. Resolve issues on reporting of data with the Natural Resource Conservation Service revolving around the Section 1619 requirements. Presently, DEP, as a regulatory agency, has been denied access to information maintained by the USDA relating to pollution reduction activities in the Chesapeake Bay watershed. Section 1619 of the 2008 Federal Farm Bill established the conditions under which the USDA may disclose information associated with agricultural operations. USDA may disclose the information to a state “working in cooperation with the Secretary in any Department [USDA] program—(i) when providing technical or financial assistance with respect to the agricultural operation, agricultural land, or farming or conservation practices....” To access the information from USDA, a state must sign a Conservation Cooperator Agreement with USDA.

Under the federal law, if the state does not want to enter into such an agreement, it may only have access to the protected information by the consent of either the agricultural producer or the owner of agricultural land. Also, DEP may have access to the information if it has been transformed into a statistical or aggregate form.

Legislative

SPLR18. As an incentive for the implementation of priority BMPs, such as forest and riparian buffers, allow for a property tax relief once installed; provided they are properly maintained.

SPLR19. Support urban nutrient management legislation.

Regulatory

SPLR20. Re-evaluate and develop regulatory changes as appropriate to address the field application of food processing waste. It is believed that significant quantities of this waste are being imported from Maryland and Virginia where the requirements to apply and dispose of this waste are more stringent. Same consideration should be given to biosolids that are field applied on lands with high phosphorus levels.

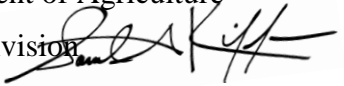
Appendix 6

BMP Survey Elements - PA Farm Bureau and PennAg Proposals

DRAFT

M E M O

TO: The Honorable John Quigley, Secretary, Pennsylvania Department of Environmental Protection
The Honorable Russell Redding, Secretary, Pennsylvania Department of Agriculture

FM: Sam Kieffer, Manager, Government Affairs & Communications Division 

CC: John Bell, Karl Brown, Chris Herr, Jennifer Reed-Harry, Joel Rotz and Rick Roush

DT: October 7, 2015

RE: Draft Plan by Pennsylvania Farm Bureau to Survey Members of Voluntary BMPs on Farms

Introductory Comments and Context

Pennsylvania Farm Bureau (PFB) is a statewide, general farm organization whose membership is comprised of more than 61,400 families in the Commonwealth. Farm Bureau members voluntarily join, or renew their membership, annually. PFB has two classes of membership: regular (farmer) members and associate members who choose to support the organization because of their role in the production of food and food products in the Commonwealth, or to take advantage of the numerous benefits and services we provide.

Within our organizational structure are fifty-four affiliated county Farm Bureaus, which are active in sixty-four of Pennsylvania's sixty seven-counties. Since 1950, PFB has been advocating for our members in Harrisburg and Washington, D.C., as well as assisting county Farm Bureaus with matters concerning local government.

PFB is based on a grass roots structure whereby county Farm Bureaus and their leaders develop the organization's public policy positions determined at an annual meeting each year. In short, our governance is bottom-up, not top down. As such, PFB is not in a position to mandate particular events or activities that individuals who voluntarily become members of the organization ultimately perform.

Recognizing the unique nature of our organizational structure, and the request by the Pennsylvania Departments of Agriculture and Environmental Protection, PFB outlines below what steps we can take, given commitment of appropriate levels of public funding, to obtain, inventory and report non-cost share BMPs in place on farms across Pennsylvania, and specifically, in the Chesapeake Bay Watershed.

Draft Plan by Pennsylvania Farm Bureau to Survey Members of Voluntary BMPs on Farms

Provided Pennsylvania's Department of Environmental Protection (DEP) will defend results of farmer self-reported data and their contributory value to EPA's model for agricultural activities in achieving nutrient reduction goals of the Chesapeake Bay TMDL, and provided adequate levels of public funding are committed to cover certain costs incurred by PFB or partners, PFB submits the following draft plan:

VOLUNTEER SURVEY

- PFB will develop a survey questionnaire, similar to the questionnaire proposed by PennAg Industries Association, that is designed to be completed by the survey recipient in minimal time, yet provide the recipient the opportunity to identify the most common and beneficial BMPs likely to be voluntarily adopted by farmers without government assistance.

MEMO

TO: Secretaries Quigley and Redding

RE: Draft Plan by Pennsylvania Farm Bureau to Survey Members of Voluntary BMPs on Farms

Page 2

- PFB will also prepare and include with the survey questionnaire a cover letter (co-signed by PFB's elected [farmer] President Rick Ebert and Agriculture Secretary [and longtime Farm Bureau member] Russell Redding. The letter, addressed to PFB's farmer (regular) membership, will appear on PFB letterhead, emphasize the importance of documenting voluntary BMPs and encourage a response from our membership.
- If sufficient sources of public funding are provided to cover mailing costs, PFB will mail the aforementioned letter and survey, along with a postage paid envelope to the approximately 23,000 regular members across the Commonwealth.
 - Initial estimates suggest the cost could range from \$15,000 to \$20,000, perhaps more if voluntary participation is high.
- In addition, PFB will create on its website an electronic survey asking the exact same questions as the hard-copy questionnaire. The survey will include the above cover letter, and will invite online responses if the farmer prefers that method over hard-copy.
- The President Ebert and Secretary Redding letter will also be emailed to the regular members for whom PFB has email addresses, accompanied by a link to the online survey.
- PFB will use our regular member publication, *Country Focus*, to serve as an additional touch point, encouraging members to complete and return the mailed survey, or to submit responses via the online mechanism previously described.
- PFB's Board of Directors, elected by county Farm Bureaus to represent members in multi-county geographic districts of Pennsylvania, will actively promote this BMP inventory initiative at every opportunity when meeting with PFB's regular members.
- PFB's eight Regional Organization Directors (RODs), PFB employees who are active regionally in assisting county Farm Bureau leaders in developing and carrying out programs, will also actively promote this BMP inventory initiative at every opportunity when meeting with boards of directors of county Farm Bureaus within their respective regions and with PFB's regular members. The RODs will carry copies of the letter and survey, and encourage farmer members to complete and submit the survey.
- With a focus on farming and agribusiness, PFB's Member Service Corp. Business Services Division employs a field staff of 40 trained accountants (IRS Enrolled Agents) who engage in tax planning and preparation services in farm homes and offices across the state. These Account Supervisors will also carry copies of the letter and survey, and encourage farmer clients to complete and submit the survey during routine visits.
- Survey questionnaires will be made available (in hard-copy and online) at PFB's Annual Meeting, November 16-18, for completion and collection.

MEMO

TO: Secretaries Quigley and Redding

RE: Draft Plan by Pennsylvania Farm Bureau to Survey Members of Voluntary BMPs on Farms

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SURVEY RESPONSES

- All survey questionnaires will be returned to PFB's Camp Hill office where appointed PFB staff will record and categorize responses and check for duplication. Responses will be recorded and sorted by county.
- Each survey response will be given an identification number. Names and addresses that correspond to the identification number will remain in PFB's possession and not shared with entities outside the organization (with the exception, of course, for verification purposes outlined below).

DATA VERIFICATION

- If data is required to be verified by a third party, PFB will partner with Penn State Extension to do so on a statistically significant random sample, provided sufficient sources of public funding are provided to cover costs to be incurred by Penn State Extension to complete verification activities.
 - No cost estimate is available at this time, but Rick Roush – Dean of Penn State's College of Agricultural Sciences – is ready to partner with PFB on the verification process, provided sufficient public funding is made available.
- Names and addresses of the random sample identified for verification will be shared only with Penn State Extension for purposes of the verification to be conducted by Extension personnel.

TIMELINE

- PFB is prepared to begin implementing this plan as early as November, if sufficient public funding is made available by that time.
- Assuming a November 2015 date for initiation of this project, a realistic period for gathering substantial data from survey responses would be November 2015 through March 2016. This five month window is when PFB conducts the bulk of face-to-face meetings with members. Also, all of the farmer clients using our Members Service Corp. Business Services Division are visited during this time frame.
- If a verification process is necessary for this exercise, we believe the sampling, identification and verification visits could realistically occur within a 45 day window (i.e. through May 15).

Concluding Thoughts and Concerns

PFB has been actively engaged as stakeholder in the development of plans and programs for pollution control and reduction in the Chesapeake Bay TMDL for decades. And PFB has long supported feasible initiatives to capture and adequately credit in the Bay Model farmers' conservation practices, based on principles commonly accepted by professions or academia as accurately representative of conservation practices actually being performed on farms.

MEMO

TO: Secretaries Quigley and Redding

RE: Draft Plan by Pennsylvania Farm Bureau to Survey Members of Voluntary BMPs on Farms

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Unfortunately, academically supported plans and initiatives for estimating and reporting non-cost share BMPs offered by PFB and other stakeholders have been repeatedly rejected by EPA, with – largely – demands by EPA for a much more stringent protocol for widespread personal confirmation and verification on each individual farm by “qualified” personnel. We are certainly willing to participate in the effort to generate a record of voluntary and/or self-funded practices. But given EPA’s consistent rejection of protocols that fall short of initial certification and subsequent verification of virtually every farm by “qualified” personnel, we are concerned that efforts of PFB, PFB’s Member Service Corp. Business Services and Penn State Extension, described above, will likewise be considered insufficient by EPA.

We encourage the Departments of Agriculture and Environmental Protection to call upon EPA for necessary and realistic revisions to a flawed Model and failure of current protocols to feasibly measure and estimate performance of conservation practices. As you well know, the Model not only fails to account for non-cost share BMPs, it also gives little or no credit to conservation practices that are not installed to NRCS specifications, even though these practices do provide a measureable environmental benefit. What’s more – as we have discussed – the Model was drafted under an assumption that flatly rejects crediting of conservation practices commonly performed in Pennsylvania that meaningfully manage pollution runoff and improve environmental quality but to a lesser degree than what EPA would consider to be optimum. The notion that cover crops harvested for feed and/or upon which manure has been applied provides no creditable environmental benefit is confusing and demoralizing to Pennsylvania farmers.

In addition, PFB feels very strongly that specific information about individual farms is private data and must be protected. Among the agricultural community, there is both widespread skepticism that environmental enforcement personnel (particularly those at the federal level) or advocates would ever analyze or respond to data volunteered by an individual farmer in an objective or responsible manner, and a strong belief that those volunteers of information would inevitably become targets of regulatory or political action by enforcement personnel or advocates if not kept absolutely confidential. Unlike most businesses that make up Pennsylvania’s economy, farms are, most often, not just the place of business but also the family residence. In a world where extreme activism captures headlines, PFB must insist that confidentiality of these farms is maintained and that no public record connecting practices to individual farms exist.

Finally, the request of the Departments of Agriculture and Environmental Protection for PFB to become a collector of farm practice data falls outside our normal Program of Work and was not part of our budget considerations. In addition, if Penn State Extension is called upon for data verification, they will incur costs that were not previously planned or budgeted. The commitment of DEP to provide adequate funding is important and necessary.

Date: October 5, 2015

To: Secretary Quigley, PA Department of Environmental Protection
Secretary Redding, PA Department of Agriculture

From: Christian Herr and Jennifer Reed-Harry

RE: Data available from PennAg Membership

Dear Secretary Quigley and Secretary Redding:

As a follow-up to our meeting last week and your request for ideas and data availability from the PennAg membership, please consider the attached documents as mere launching points for discussion.

Several examples of data available from our membership would include:

- Ability to capture data from integrated farms (poultry and swine):
 - Manure Storage
 - Manure Transport
 - Manure Management Plans/Conservation Plans
 - Manure sample data
 - Soil sample data
 - Swine Phytase
 - On-going support for the DEP/EPA/PSU Poultry Data Collection (under the direction of Dr. Paul Patterson at PSU)
- Ability to capture data from seed and fertilizer companies:
 - Acres soil sampled
 - Non-manure acres under conservation planning
 - Tillage Practices
 - Sales data of cover crop seeds
 - Sales data of fertilizer
- Additional Thoughts:
 - All livestock exhibitors at state owned facilities (i.e. Farm Show Complex) could receive compliance information in their registration packets from PDA and DEP.
 - Partner with Insurance Companies to offer incentives (insurance discount) for farms in compliance with state rules and regulations.
 - PSATS and local Township Officials – is there a role for local townships to assist in Chesapeake Bay Compliance by having them outreach to their local farms and offer



- funding for this outreach and possibly withhold funding (such as liquid fuels money) for townships that do not wish to assist in this outreach.
- PVMA (PA Veterinarian Medical Association) and outreach to the Equine sector of Agriculture – could this be another partner to communicate to farmers and the general population of rules and regulations (such as stream bank fencing, ACA, etc.) Vets are on farms regularly and communicating with farmers – they are a trusted source of information.
 - Farmers enrolled in Farmland Preservation; Clean and Green or with a Homestead Exemption could provide proof that their farm is in compliance with all rules and regulations.

We look forward to working with your teams to address the issue of compliance with the Chesapeake Bay obligations attributed to Pennsylvania. We understand there is not one resolution to the issue. Instead it will take a suite of practices across all sectors (agriculture, urban and suburban) and most importantly, we must work together, with a united voice and approach, to address the issue of the Chesapeake Bay.

We respectfully request a follow-up meeting with you and your teams to further clarify our thoughts and expand on the concepts presented for the purpose of initiating a plan of action.

Confidential – Internal Working Draft Document

Voluntary Best Management Practice (BMP) Annual Data Collection

Township _____ County _____ Watershed _____

What cover crops do you use: Wheat _____ Barley _____ Rye _____ Other _____ None _____

Number of Animals:

Broilers _____	Nursery Pig _____	Veal Calf _____	Dairy Calf _____
Layers _____	Finisher Pig _____	Beef Cattle _____	
Turkeys _____	Sow _____	Cow (Milking) _____	
Ducks _____	Boar _____	Heifer _____	

Do you have an Act 38 Nutrient Management Plan: Implemented _____ Date of NMP _____ or in Progress _____

Manure Management Plan: Implemented _____ Date of MMP _____ or in Progress _____

Mortality Management Plan: Yes _____ No _____

Conservation Plan/Erosion & Sedimentation Plan: Yes _____ Date of Plan _____ No _____

Crop Fields – do you:

No Till—Yes or No	Number of Acres _____
Min Till – Yes or No	Number of Acres _____
Conv. Till – Yes or No	Number of Acres _____

Enrolled in NRCS and/or FSA funding/cost share programs: yes _____ no _____

Do you have vegetated or tree buffers between fields and streams? Yes _____ No _____ How wide _____ (feet)

Is manure used on your farm or exported? _____

Manure Storage: Type _____ (i.e. under barn, outside/concrete, outside/earthen lined) and Capacity _____ (gallons) and Do you have an engineer seal on the storage? _____

Soil Testing: Yes _____ No _____ Frequency _____ (i.e. 1/3 of total acres annually)

Manure testing: Yes _____ No _____ Frequency _____

Feed Additives: Yes _____ No _____

Does a Nutritionist balance your feed ration? Yes _____ No _____

Confidential – Internal Working Draft Document –
For Crop Farms Only – no animals on site

Voluntary Best Management Practice (BMP) Annual Data Collection

Township _____ County _____ Watershed _____

What crops do you grow?

Grain Crops: _____ Corn _____ Soybeans _____ Wheat _____ Rye _____ Barley _____

What cover crops do you use: Wheat _____ Barley _____ Rye _____ Other _____ None _____

Typically, when do you plant your cover crop? _____

Do you use commercial fertilizer? Yes ___ No ___ Do you follow recommendations from your salesman? Do you have a written plan of crop fertilizer needs based on crop uptake?

Do you use animal manure or compost?

Do you follow an Act 38 Nutrient Balance Sheet for manure application? Date of last update you are following: _____:

Conservation Plan/Erosion & Sedimentation Plan: Yes _____ Date of Plan _____ No _____

Crop Fields – do you:

No Till—Yes or No	Number of Acres _____
Min Till – Yes or No	Number of Acres _____
Conv. Till – Yes or No	Number of Acres _____

Enrolled in NRCS and/or FSA funding/cost share programs: yes _____ no _____

Do you have vegetated or tree buffers between fields and streams? Yes ___ No ___ How wide _____ (feet)

Soil Testing: Yes _____ No _____ Frequency _____ (i.e. 1/3 of total acres annually) -
What lab do you use: _____ ---

Phytase Data - 12/2013

Pig Inventory per PA NASS 2007	1,167,449
minus 1/2% for show pigs/AI	-5,837
Pig Inventory per PA NASS 2007 that would receive Phytase	1,161,612*
Pig inventory per integrators in 2010	1,130,000

For the purpose of feeding the model/data that is accepted by EPA - we used 1,161,612 pigs in PA

Per swine vets, swine nutritionist and proven research - the use of Phytase reduces phosphorus excreted by 0.58 lb/pig**

Using the 2007 PA NASS numbers minus show pigs, AI (boar studs/breeding/genetics) - the use of Phytase has created a reduction of 337 tons of Phosphorus excreted

*the use of phytase in the swine diets is an industry standard in PA

** Iowa State; University of Kentucky; Purdue University; Cromwell et. al, 1991; Reese and Koelsch, 1999; Hill et. al 2008

Chesapeake Bay Model

Data Collection Project (Goodlander, Patterson, Reed-Harry) – September 2014

Company Name: _____

Counties where you have houses	Total Number of Houses per County	Number of various types of feathers in the county for your company				
		Broilers	Layers	Turkeys	Ducks	Pullets

Litter Management:

- What is the cumulative annual volume (lbs or tons) of litter per house? _____
- When does clean-out occur?
 - After each flock _____
 - Annually _____
 - Other – describe _____
- Where does the litter go?
 - Broker _____
 - On Farm use _____
 - Neighbor _____
 - Other- describe _____
- What is the nutrient analysis of the litter (N-P-K) _____

Who is the environmental contact within your company: _____

Practice	How would the practice be counted	Who would perform verification	Timeliness of verification
Manure Storages	Report from builders on size installed and location	CD could spot check	Annually
Buffers			
Dairy - Barnyards/ACA's	Report from builders; Cooperation from milk co-ops	CD could spot check	Annually
Streambank Fencing			
Phytase in Swine Feed	Tonage from Feed Mills and # of pigs from Swine Owners	CD/DEP spot check feed slips	Annually
Mortality Composters	Report from builders (for new barns); Integrators could supply for barns 2006 to 2011	CD/DEP spot check	Annually
Commercial Fertilizer	Data collection from companies (acres sampled, product sold, point of use of product)	PDA spot check	Annually
Horse Pastures with Manure Mgt	Owners supply acres under a management plan	NASS?	Annually?
Manure Transportation/Export	Brokers, Haulers and Nutrient Trading Projects	DEP, PDA?	Annually
Seed Sold for Cover Crop	PA Seed companies could provide species & amount	PDA?, NRCS?	Annually?